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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NGUYEN, PHU K	
ART UNIT	**PAPER NUMBER**
2673	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/496,137	SCHKOLNE ET AL.	
	Examiner	Art Unit	
	Phu K. Nguyen	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/12/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21 and 23-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2,3,5-7 and 20* is/are allowed.

6)☒ Claim(s) *1,4,8,9,15-19,21 and 23-32* is/are rejected.

7)☒ Claim(s) *10-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Phu Nguyen

PHU K. NGUYEN
PRIMARY EXAMINER
GROUP 2300

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/12/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, 9, 18-19, 26-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over NISHINO et al. (3D Object Modeling Using Spatial and Pictographic Gestures).

As per claim 1, Nishino teaches the claimed "method of producing a shape, comprising: "using a virtual reality environment in which positions of a user's hand are tracked" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface by adding shapes defined by hand movements" (Nishino, page 56, column 2, lines 3-9); "wherein an added shape comprises a surface region formed from

sampled positions of a hand movement in the virtual reality environment during at least one of said intervals" (Nishino, object's shape is defined by the user's gestures or hand's positions; page 55, column 1, lines 19-25). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

Applicant's arguments filed 9/12/2005 have been fully considered but they are not persuasive.

Applicant argues that the cited reference fails to teach "forming a three-dimensional modeled surface by adding shapes defined by hand movements at each of a plurality of intervals." Nishino's shapes are not only primitive or rough shapes but also can be the complex blended shapes (page 54, column 1, "a blended shape is used as a primitive for another blending operations"); therefore, Nishino's blended shape is equivalent to the claimed "shapes" whose surface is defined by hand movements (Nishino, deformation stages in figure 11(a), page 57). It is further noted that the claimed "a plurality of intervals" can be interpreted as different stages of forming complex object in Nishino reference.

Claim 4 adds into claim 1 "method as in claim 1 further comprising using an incremental technique to take an existing mesh of samples and changing it to add a

new sample" which Nishino teaches in page 55, column 1, lines 39-41, with the deform and point postures to incrementally shape the object through its samples. In computer display arts, the objects are displayed as mesh in which the equations are used to describe the form of the mesh. Nishino clearly teaches the mesh with the wire frame model (figure 13) to be mapped by texture (figure 3) or more specific, defining the object with a shape formed by polygons (page 56, column 2, lines 14-20).

Claim 9 adds into claim 1 "defining a hand position which forms an eraser tool" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34; e.g., by modifying (e.g., scale down) a part of the object, Nishino in effect erases a part of the existing shape), it would have been obvious because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

The superquadric equations is well known in the art for describing the polygonal mesh form (see Nishono, page 56, column 2, lines 14-20). Given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), by modifying (e.g., scale down) a part of the object, Nishino in effect erases a part of the existing shape.

As per claim 18, Nishino teaches the claimed "method of producing a shape, comprising: "tracking a position of a user's hand" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface based on said position of said user's hand" (Nishino, page 56, column 2, lines 3-9). It is noted that Nishino does not

explicitly teach the shape adding operation is performed "at different times" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at different times because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner. It is also noted that Nishino does not explicitly teach ""wherein said forming comprises using the hand to create 3dstrokes of shape; further comprising displaying a trace of the path of the hand, sensing at least 7 of the hand's degrees of freedom for the purposes of shape creation, said degrees of freedom including the hand's *position and* orientation in space, along with degrees of freedom that are affected by the hand's posture". However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34, hand posture, hand position, hand orientation, ...), it would have been obvious because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations. It is noted that Nishino's shapes are not only primitive or rough shapes but also can be the complex blended shapes (page 54, column 1, "a blended shape is used as a primitive for another blending operations"); therefore, Nishino's blended shape is equivalent to the claimed "shapes" whose surface is defined by hand movements (Nishino, deformation stages in figure 11(a), page 57). Thus, Nishino's hand shape and its position data used to create the object (page 55, column 1, lines 21-28) clearly satisfy the claimed "3d-strokes of shape defined by hand movements."

As per claim 19, Nishino teaches the claimed "method of producing a shape, comprising: "tracking a position of a user's hand" (Nishino, page 55, column 1, lines 19-25); "forming a three-dimensional modeled surface based on said position of said user's hand" (Nishino, page 56, column 2, lines 3-9); "said forming comprises using the hand to create 3d-Strokes of shape" (Nishino, page 55, column 1, lines 37-39, the user shapes the 3D object with the deform posture in which the curvature 3d surface of the object is a tangent to the hand); "merging samples from one hand position to an existing shape" (Nishino, the user uses the blend posture to merge the primitive shape represented by its samples to the existing shape). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner. It is noted that Nishino's shapes are not only primitive or rough shapes but also can be the complex blended shapes (page 54, column 1, "a blended shape is used as a primitive for another blending operations"); therefore, Nishino's blended shape is equivalent to the claimed "shapes" whose surface is defined by hand movements (Nishino, deformation stages in figure 11(a), page 57). Thus, Nishino's hand shape and its position data used to create the object (page 55, column 1, lines 21-28) clearly satisfy the claimed "3d-strokes of shape defined by hand movements."

As per claim 26, Nishino teaches the claimed "method of producing a shape, comprising: "a hand tracking element, which tracks three dimensional positions and hand shapes of an operator's hand in a virtual reality environment in which positions of a user's hand are tracked" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface by adding shapes defined by hand movements" (Nishino, page 56, column 2, lines 3-9). It is noted that Nishino does not explicitly teach the shape adding operation is performed "at each of a plurality of intervals" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at each of a plurality of intervals because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner. It is noted that Nishino's shapes are not only primitive or rough shapes but also can be the complex blended shapes (page 54, column 1, "a blended shape is used as a primitive for another blending operations"); therefore, Nishino's blended shape is equivalent to the claimed "shapes" whose surface is defined by hand movements (Nishino, deformation stages in figure 11(a), page 57). Thus, Nishino's hand shape and its position data used to create the object (page 55, column 1, lines 21-28) clearly satisfy the claimed "3d-strokes of shape defined by hand movements." Furthermore, in computer display arts, the objects are displayed as mesh in which the equations are used to describe the form of the mesh. Nishino clearly teaches the mesh

with the wire frame model (figure 13) to be mapped by texture (figure 3) or more specific, defining the object with a shape formed by polygons (page 56, column 2, lines 14-20).

Claim 32 adds into claim 26 "a mesh of triangles" which Nishino does not explicitly teach. However, it would have been obvious that the shape of the polygons in Nishino's mesh (page 56, column 2) is triangle because it would improve the speed of forming polygonal mesh and the triangular mesh had been widely used to form a 3D object in the art at the time the invention was made (official notice).

As per claim 27, Nishino teaches the claimed "shape drawing system", comprising: "a user interface which operates to command shapes to be created" (Nishino, page 55, column 1, lines 19-25, page 56, column 2, lines 3-9). It is noted that Nishino does not explicitly teach "a processing element which incrementally adds surface regions to an extant surface" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations incrementally because the incremental arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner.

Applicant argues that the cited reference fails to teach "incremental addition of surface regions to an extant surface." Nishino's shapes are not only primitive or rough shapes but also can be the complex blended shapes (page 54, column 1, "a blended shape is used as a primitive for another blending operations"); therefore, Nishino's blended shape is equivalent to the claimed "shapes" whose surface is defined by hand movements (Nishino, deformation stages in figure 11(a), page 57). It is further noted that the claimed "a plurality of intervals" can be interpreted as different stages of forming complex object in Nishino reference. Nishino's blending stages of a new object to an extant object creates "incremental addition of surface regions to an extant surface" as claimed.

Claim 28 adds into claim 27 "wherein said user interface tracks hand movements" which Nishino teaches in page 55, column 1, lines 19-25.

As per claim 29, Nishino teaches the claimed "method of drawing on a computer", comprising: "displaying a first shape on the computer" (Nishino, page 56, column 2, lines 3-9); "using the hand to define a new shape, to be added to said *first* shape" (Nishino, the primitive shapes). Applicant argues that Nishino does not teach "merging samples into an existing shape" which is not correct because of the teaching in blending the primitives in figures 3 (page 53), 5 (page 54) or 11 (page 57).

It is noted that Nishino does not explicitly teach "using said new shape to apply deformations to said first shape and displaying said first shape as deformed by said new shape". However, given Nishino's deform and blend gestures, it would have been

obvious to deform the existing shape when adding a new shape causing the first shape to change shape because such claimed hand-gesture operations provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations. " Nishino's shapes are not only primitive or rough shapes but also can be the complex blended shapes (page 54, column 1, "a blended shape is used as a primitive for another blending operations"); therefore, Nishino's blended shape is equivalent to the claimed "shapes" whose surface is defined by hand movements (Nishino, deformation stages in figure 11(a), page 57). It is further noted that the claimed "a plurality of intervals" can be interpreted as different stages of forming complex object in Nishino reference.

Claim 30 adds into claim 29 "*wherein* a portion of the first shape moves toward the hand" which Nishino teaches in the examples of 3D object modeling process of the teapot (figure 11-b) in which the shapes are blended, manipulated, and displayed.

As per claim 31, Nishino teaches the claimed "system of 3d shape creation", comprising: "monitoring hand posture" (Nishino, page 55, column 1, lines 19-25). It is noted that Nishino does not explicitly teach "obtaining continuous variables that continuously vary between a maximum value and a minimum value based on said hand posture; and using said variables to define a shape" as claimed. However, Nishino's tracking of hand position which includes the bounded and continuous coordinate variables x, y, z suggests the claimed "continuous variables that continuously vary between a maximum value and a minimum value". Nishino's hand

shape and its position data used to create the object (page 55, column 1, lines 21-28) through the modification of shape descriptions clearly satisfy the claimed """"the hand variables to define a shape". It would have been obvious to use that claimed variables to define a shape because Nishino's shape have been defined by the hand gestures including its position and such the use of variables to represent the hand gestures improves the efficiency of calculation during the interactive movement of the user and enhances the computer operations.

Claims 8, 15-17, 21, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishino in view of BRODY et al. (BLUI, a Body Language User).

The indicated allowability of claims 22-23 or newly amended claim 15 is withdrawn in view of the newly discovered reference(s) to Brody. Rejections based on the newly cited reference(s) follow.

As per claim 15, Nishino teaches the claimed "method of producing a shape, comprising: "tracking a position of a user's hand" (Nishino, page 55, column 1, lines 19-25); and "forming a three-dimensional modeled surface by finding hand positions" (Nishino, page 56, column 2, lines 3-9), storing those positions (Nishino, figure 9, store, distributed buffer), and "forming the surface using said positions to define points on the actual surface that is formed" (Nishino, page 55, column 1, lines 31-33, the hand position using to move, scale and rotate the object defines points on actual formed surface). Nishino's hand shape and its position data used to create the object (page 55,

column 1, lines 21-28) clearly satisfy the claimed ""the hand position at different times is used to form actual points on the surface." It is noted that Nishino does not explicitly teach the shape adding operation is performed "at different times" as claimed. However, given Nishino sequential performance of shaping operations (e.g., page 54, figure 6-b), it would have been obvious to perform the operations at different times because the order arrangement of operations in time intervals improves the realistic procedure of shaping an object and enhances the designing in a natural and intuitive manner. It is noted that Nishino does not teach "a first hand posture comprises a start to track posture". However, Brody teaches that such start posture is well known in a "3D gestural interface" system such as Nishino (Brody, Start-to-Draw gesture, page 4). It would have been obvious, in view of the teaching of Brody, to configure Nishino's system as claimed because the Start gesture signals the system to sample the hand's position to interpret user's commands (Brody, page 3, sections 2.1 – Drawing with BLUI - and 2.2 – Gestures; Nishino, page 55, column 1, lines 19-25).

Claim 16 adds into claim 15 "wherein said forming comprises using the hand to create 3d-strokes of shape" which Nishino teaches in page 55, column 1, lines 37-41.

Nishono's hand movements in 3D space in process of forming the shape (figure 3, hand's movements illustrate the tapering, twisting) is equivalent to the claimed "using hand to create 3D strokes of shape."

Claim 17 adds into claim 16 "said using comprises using the bend of the hand to define the curvature of 3d-strokes" which Nishino teaches in the deform posture (Nishino, page 55, column 1, lines 37-39, the user shapes the 3D object with the deform posture in which the curvature 3d surface of the object is a tangent to the hand).

Nishono's hand movements in 3D space in process of forming the curvature shape (figure 6, hand's movements illustrate the curvature bending) is equivalent to the claimed "using hand to create 3D stroke curvature."

Claims 21 adds into claim 15 "using hand postures to switch between different modes of operation" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34; example, hand posture for deform mode and hand posture for grasp mode), it would have been obvious to use hand gesture to switch operation modes because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 23 adds into claim 15 "a stop track posture" which Nishino does not teach. However, Brody teaches that such start posture is well known in a "3D gestural interface" system such as Nishino (Brody, I'am Done gesture, page 4). It would have been obvious, in view of the teaching of Brody, to configure Nishino's system as claimed because the Stop gesture signals the system to stop to sample the hand's

position to interpret user's commands (Brody, page 3, sections 2.1 – Drawing with BLUI - and 2.2 – Gestures; Nishino, page 55, column 1, lines 19-25).

Claim 24 adds into claim 15 "displaying different tools at the hand's position based on different postures" which Nishino teaches in page 56, column 1, lines 18-34, figure 10-b for examples.

Claims 25 adds into claim 15 "using the finger to draw a narrower stroke" which Nishino does not explicitly teach. However, given Nishino's gestures of natural and intuitive manipulations (page 56, column 1, lines 18-34), it would have been obvious to use figure to draw a narrow stroke because such claimed hand gestures provides the gesture based interface to improve the interface between the user and the system in a natural and intuitive manner and enhances the computer operations.

Claim 8 adds into claim 1 "a first hand position which defines a starting position and a second hand position which defines a stopping of drawing" which Nishino does not explicitly teach. However, Brody teaches that such start posture is well known in a "3D gestural interface" system such as Nishino (Brody, Start-to-Draw and I'am Done gestures, page 4). It would have been obvious, in view of the teaching of Brody, to configure Nishino's system as claimed because the Start gesture signals the system to

begin and stop to sample the hand's position to interpret user's commands (Brody, page 3, sections 2.1 – Drawing with BLUI - and 2.2 – Gestures; Nishino, page 55, column 1, lines 19-25).

Claims 10-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2-3, 5-6, 7, and 20 are allowed.

This action has been made NON-FINAL.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (571) 272 7645. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, bipin Shalwala can be reached on (571) 272 7681. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu K. Nguyen
December 20, 2005

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